



Contribution ID: 776 Contribution code: MOPL079

Type: **Poster Presentation**

## Monochromatization Interaction Region Optics Design for Direct s-channel production at FCC-ee

*Monday, 8 May 2023 16:30 (2 hours)*

One of the most fundamental measurements since the Higgs boson discovery, is its Yukawa couplings. Such a measurement is only feasible, if the centre-of-mass (CM) energy spread of the e+e- collisions can be reduced from ~50 MeV to a level comparable to the Higgs boson's natural width of ~4 MeV. To reach such desired collision energy spread and improve the CM energy resolution in colliding-beam experiments, the concept of a monochromatic colliding mode has been proposed as a new mode of operation in FCC-ee. This monochromatization mode could be achieved by generating a nonzero dispersion function of opposite signs for the two beams, at the Interaction Point (IP). Several methods to implement a monochromatization colliding scheme are possible, in this paper we report the implementation of such a scheme by means of dipoles. More in detail a new Interaction Region (IR) optics design for FCC-ee at 125 GeV (direct Higgs s-channel production) has been designed and the first beam dynamics simulations are in progress.

### Funding Agency

### Footnotes

### I have read and accept the Privacy Policy Statement

Yes

**Primary author:** Mr ZHANG, Zhandong (Institute of High Energy Physics)

**Co-authors:** FAUS-GOLFE, Angeles (Université Paris-Saclay, CNRS/IN2P3, IJCLab); BAI, Bowen (Harbin Institute of Technology, Shenzhen); ZIMMERMANN, Frank (European Organization for Nuclear Research); JIANG, Hongping (Laboratoire de Physique des 2 Infinis Irène Joliot-Curie); OIDE, Katsunobu (Geneva University)

**Presenter:** Mr ZHANG, Zhandong (Institute of High Energy Physics)

**Session Classification:** Monday Poster Session

**Track Classification:** MC1: Colliders and other Particle Physics Accelerators: MC1.A02: Lepton Circular Colliders